The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte JEFFREY LEE JONES, DANIEL E. BANKS, JAMES ROBERT CLARK and CARL HEINZ MEYER

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PAT. & T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Appeal No. 2002-1648
Application No. 09/471,153

ON BRIEF

Before McQUADE, NASE, and BAHR, Administrative Patent Judges.

NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 4 to 6 and 8, which are all of the claims pending in this application.[1]

We REVERSE.

[1] Claims 2, 3 and 7 were canceled subsequent to the final rejection.

BACKGROUND

The appellants' invention relates to a drum brake arrangement for motor vehicles (specification, p. 1). A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Dozier	4,452,347	June 5, 1984
Williams	5,887,687	Mar. 30, 1999

Claims 1, 4 to 6 and 8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Dozier in view of Williams.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejection, we make reference to the final rejection (Paper No. 5, mailed April 10, 2001) and the supplemental answer (Paper No. 10, mailed January 10, 2002) for the examiner's complete reasoning in support of the rejection, and to the brief (Paper No. 9, filed December 10, 2001) and reply brief (Paper No. 11, filed February 27, 2002) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. Upon evaluation of all the evidence before us, it is our conclusion that the evidence adduced by the examiner is insufficient to establish a prima facie case of obviousness with respect to the claims under appeal. Accordingly, we will not sustain the examiner's rejection of claims 1, 4 to 6 and 8 under 35 U.S.C. § 103. Our reasoning for this determination follows.

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). A prima facie case of obviousness is established by presenting evidence that would have led one of ordinary skill in the art to combine the relevant teachings of the references to arrive at the claimed invention. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988) and In re Lintner, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). Rejections based on 35 U.S.C. § 103 must rest on a factual basis with these facts being interpreted without hindsight reconstruction of the invention from the prior art. The examiner may not, because of doubt that the invention is patentable, resort to speculation, unfounded

assumption or hindsight reconstruction to supply deficiencies in the factual basis for the rejection. See In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968). Our reviewing court has repeatedly cautioned against employing hindsight by using the appellants' disclosure as a blueprint to reconstruct the claimed invention from the isolated teachings of the prior art. See, e.g., Grain Processing Corp. v. American Maize-Products Co., 840 F.2d 902, 907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988).

With this as background, we analyze the prior art applied by the examiner in the rejection of the claims on appeal.

Dozier teaches (column 1, lines 16-59) that

> [i]t is not uncommon in the heavy duty truck and trailer field to utilize drum brakes which employ a rotary cam actuation means. Typically such brakes include a pair of brake shoes having adjacent ends pivotally mounted on a pair of pivot pins supported by a brake spider which is secured to the axle spindle. A rotatable actuating cam is mounted at the opposite end of the spider and disposed between the other ends of the brake shoes. Rotary movement of the cam causes each of the brake shoes to move outwardly about the pivot pins to contact the inwardly facing friction surface of the brake drum.
>
> For such heavy duty brake installations, the brake shoes are relatively wide and are commonly of the dual web type. Typically, each dual web brake shoe is supported at its pivital [sic, pivotal] end by structure which is centrally located on the brake shoe and the ends of each pivot pin extend outwardly from opposite sides of the support to be recieved [sic, received] within web bores or recesses in each of the webs. The webs at the other end of each brake shoe support a roller means therebetween which makes rolling contact with the

> actuating cam and receives the actuation force therefrom. However, the actuating cam cannot be supported at a location between the brake shoe webs, as can the pivot pins, because the rotatable cam is physically positioned in this region. Therefore, the support for the rotary cam actuation means is typically axially separated from a location between the webs and central of the brake shoes. As a result, brake spiders utilized in brakes of this type include support structure which is aligned between the webs of shoes at one end and which is offset to support the rotary cam actuation means at the other end.
>
> U.S. Pat. Nos. 2,167,607; 2,957,706; 3,131,583 and 4,157,747 disclose brake spider configurations of this type and are usually forged to provide a thickened, reinforced structure having sufficient strength to withstand the axially separated forces acting on the spider during braking operation. While brake spiders of this type have been satisfactorily employed for a number of years, it is always desirable to reduce the overall weight of such heavy duty brake installations and to reduce the cost of their manufacture and assembly.

Figures 1 and 2 of Dozier show a drum brake assembly 10 including a prior art brake spider 12 which is typical of the type of brake found in heavy duty trucks and trailers. The spider 12 includes a central portion 14 having an opening 16 therethrough and being mounted on an axle 18. The axle 18 extends through the opening 16 as the central portion 14 is welded to the axle 18 at both edges 19 at opposite ends of the opening 16. A brake drum 20 is mounted to a wheel (not shown) which is rotatably mounted on the spindle of the axle 18 in a manner well known in the art.

Dozier's brake drum assembly 10 includes a pair of brake shoes 22 which are selectively moved outwardly to produce frictional engagement with the interior of the brake drum 20 by an actuation means 30. The actuation means 30 is in the form of a

rotary cam actuator which includes a cam 32 which is rigidly secured to a cam shaft 34. Dozier teaches (column 3, lines 13-17) that "[t]he cam shaft 34 can be rotated by means (not shown) which are well known in the brake art to cause the cam 32 to rotate outwardly displacing the brake shoes 22 for braking engagement with the interior of the drum 20." The brake shoes 22 include rollers or cam followers 36 at the end 37 thereof adjacent the cam 32 to allow smooth application of the force generated by rotation of the cam 32 to each of the brake shoes 22.

As shown in Figure 1 of Dozier, the first end 38 of the spider 12 includes an opening 40 therethrough for support of the cam shaft 34 as the cam 32 extends from one end thereof to be centrally aligned with the brake shoes 22. The opening 40 may be provided with any form of bushing or bearing, including lubrication fittings (not shown), well known in the art to allow free rotation of the cam shaft 34 therein. The other end 42 of the spider 12 is axially offset from the first end 38 to be aligned with a region between the webs 24 of the brake shoes 22.

Williams' invention relates to a brake assembly characterized by a planar back plate apparatus adapted for securement about an axle housing to support the remainder of the apparatus. As illustrated in Figures 1 to 6 of Williams, the brake system comprises a back plate 12 which defines a central aperture 14 through which

the vehicle axle passes, and a plurality of apertures 16 through which the plate 12 is secured to the axle housing (not shown). The back plate 12 is provided with first and second radial extensions 18, 20 onto which are secured, respectively, brake shoes 22, 24 and a first mounting bracket 26. The second radial extension 20 defines an aperture 28 through which a cam shaft 30 and guide sleeve 32 are directed. A second mounting bracket 34 is affixed to one end of the guide sleeve 32 while the first mounting bracket 26 is affixed to the other end of the guide sleeve 32.

The brake system of Williams further includes a brake cylinder 36 in the form of a pneumatic actuator which is provided with a first actuator shaft 38. The cylinder 36 is secured to the second mounting bracket 34 by bolts 40 through flange 42 on bracket 34. In turn, the first mounting bracket is mounted to the back plate 12 by bolts 44 through apertures 46 in plate 12, and secured with nuts 48. The cam shaft 30 is disposed within guide sleeve 32 such that the splined male end 50 of shaft 30 interfits in driving engagement with the cooperating splined female receptacle 60 of a self-adjusting actuator linkage mechanism 62. Appropriate bearings 64 and spacers/washers 66 are provided to enable efficient operation of the shaft 30 within the guide sleeve 32.

Brake shoes 22, 24 of Williams are pivotally affixed to the first radial extension 18 of the back plate 12 at apertures 68, secured through apertures 74 with bolts 70 and bushings 72. Spacing of the brake shoes from the back plate is maintained by a pair of spacers 52. A pair of rollers 76 interfit with projections 78 on brake shoes 22, 24. When inserted into the guide sleeve 32, a cam mechanism 80 on the end of cam shaft 30 is positioned between the rollers 76.

The assembled brake assembly of Williams is illustrated in Figures 5 and 6. When a brake pedal (not shown) is depressed, the first actuator shaft 38 is actuated. The splined male end 50 of cam shaft 30 is engaged with the female splined receptacle 60 of the linkage mechanism 62 (which Williams states is well known in the art and is not described in detail), such that when the shaft 38 is extended, the linkage mechanism 62 causes the cam shaft 30 to rotate about its longitudinal axis within the guide sleeve 32. Rotation of the cam shaft 30 induces rotation of the cam 80. The cam 80 is positioned between the pair of rollers 76, so that rotation of the cam 80 causes the rollers, and therefore the brake shoes 22, 24 to move radially, relatively farther apart from one another, with pads 82 of the brake shoes 22, 24 bearing against the brake drum (not shown).

After the scope and content of the prior art are determined, the differences between the prior art and the claims at issue are to be ascertained. Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966).

Based on our analysis and review of Dozier and claims 1 and 8 (the independent claims on appeal), it is our opinion that the differences include (1) a pneumatic brake actuator cylinder provided with an actuator rod extending therefrom; (2) a brake actuating lever interconnecting the actuator rod and the first end of a brake actuating shaft; (3) a mounting sleeve having a first end and a second end, the first end of the mounting sleeve is secured to the pneumatic brake actuator cylinder and the second end of the mounting sleeve is secured to the actuator support plate of a brake spider; and (4) the brake actuating shaft rotationally supported and positioned within the mounting sleeve.

In the rejection as set forth in the answer[2] (pp. 3-4) the examiner determined that

> [i]t would have been obvious to one of ordinary skill in the art to have provided Dozier's brake assembly with a known actuating assembly as taught by Williams in order to perform the intended function of the actuator. It is noted that pneumatic brake actuators are well known in the art to actuate brake shoes as

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[2] The obviousness determination set forth in the answer is different than the obviousness determination set forth in the final rejection. For example, in the final rejection the examiner did not determine that it would have been obvious at the time the invention was made to a person of ordinary skill in the art to have provided Dozier's brake assembly with a mounting sleeve as recited in the claims under appeal.

> evidence by Williams. It is further noted that Dozier's brake assembly, as modified by Williams' means of actuating, would have the second end of said mounting sleeve secured to the actuating end of Dozier's spider.

In our view, absent the use of impermissible hindsight, the applied prior art contains no motivation, teaching or suggestion for a person of ordinary skill in the art at the time the invention was made to have modified the brake assembly of Dozier to arrive at the claimed subject matter. The teachings of Williams would have been sufficient for a person of ordinary skill in the art at the time the invention was made to have modified the brake assembly of Dozier by actuating Dozier's cam shaft 34 (i.e., the claimed brake actuating shaft) via a pneumatic brake actuator cylinder provided with an actuator rod extending therefrom and a brake actuating lever interconnecting the actuator rod and a first end of Dozier's cam shaft 34. However, the teachings of the applied prior art provide no teaching, suggestion or motivation for a person of ordinary skill in the art at the time the invention was made to have modified the brake assembly of Dozier by adding a mounting sleeve having a first end and a second end, the first end of the mounting sleeve secured to the pneumatic brake actuator cylinder and the second end of the mounting sleeve secured to the actuator support plate of the brake spider and Dozier's cam shaft 34 rotationally supported and positioned within the mounting sleeve. While Williams does teach a mounting sleeve having a first end secured to a pneumatic brake actuator cylinder and a second end secured to a back

plate with a cam shaft rotationally supported and positioned within the mounting sleeve, we can discern no reason, absent the use of impermissible hindsight, for one skilled in the art to apply these teachings to Dozier's brake assembly which utilizes a brake spider, not a back plate. In that regard, Figure 1 of Dozier clearly teaches one skilled in the art that a mounting sleeve, as claimed, is not attached to the spider 12. While it is true that a mounting sleeve, as claimed, could be attached to Dozier's spider 12, this does not make such a modification obvious unless the prior art suggested the desirability of the modification. See In re Gordon, 773 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

For the reasons set forth above, the decision of the examiner to reject claims 1, 4 to 6 and 8 under 35 U.S.C. § 103 is reversed.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 4 to 6 and 8 under 35 U.S.C. § 103 is reversed.

REVERSED

JOHN P. McQUADE
Administrative Patent Judge

JEFFREY V. NASE
Administrative Patent Judge

JENNIFER D. BAHR
Administrative Patent Judge

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